Improving the Performance of Maternal Anemia Interventions in Africa

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This brief describes the process used to develop a comprehensive program to control anemia in pregnant women in four districts of Uganda in 2002. We believe that the development process used is generalizable to other countries in the East and Southern African region. The approach is expected to provide a foundation for scaling up Uganda's program, and we expect that this close examination of the development process may provide useful guidance to anyone seeking to establish or improve maternal anemia control programs.

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List of Acronyms

ANC	Antenatal Care
IFA	Iron and Folic Acid
IMCI	Integrated Management of Childhood Illnesses
IPT	Intermittent Preventive Treatment
MoH	Ministry of Health
MOST	USAID Micronutrient Program
NGO	Non-governmental organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

This brief describes the process used to develop a comprehensive program to control anemia in pregnant women in four districts of Uganda in 2002. Although due to budget constraints the program has not yet been implemented on a large scale, we believe that the development process used is generalizable to other countries in the East and Southern African region. The approach is expected to provide a foundation for scaling up Uganda's program, and we expect that this close examination of the development process may provide useful guidance to anyone seeking to establish or improve maternal anemia control programs.

The process adapted the general model for the development of high quality public health interventions presented in van Bokhoven et al. 2003. Steps included: i) advocacy and wide consultation among the stakeholders, ii) clarifying policy and guideline documents, iii) describing the levels of performance necessary for success, iv) identifying gaps between actual and necessary performance, v) designing and implementing interventions to overcome the barriers, and vi) monitoring, advocacy and evaluation.

The Uganda experience with this approach was promising. Local health service providers were actively involved in developing the methodology and the tools and in the collection, analysis, interpretation and presentation of data. Barriers to effective anemia control were identified at the systems, health-provider and client levels. Engaging local health personnel in the formative assessment played an important role in mobilizing and motivating local politicians and health managers to take on the challenge of reducing anemia. The process engendered enthusiasm and commitment to finding solutions to the problems facing anemia control programs and in increasing the likelihood that the subsequent anemia interventions will be sustainable.

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Introduction

Anemia affects about half of all pregnant women in Africa, contributing substantially to maternal mortality, productivity losses and the diminished health and mental capacity of the next generation. To address these adverse effects, most African countries have committed to reduce anemia prevalence by 30% by 2010, in line with the Millennium Development Goals. Supplementation with iron and folic acid (IFA) during facility-based antenatal care (ANC) has been the primary approach to controlling anemia at a large scale. There is no doubt that taking IFA during pregnancy increases women's hemoglobin concentrations. In areas of high malaria and hookworm prevalence, it is also clear that controlling malaria infection with intermittent preventive treatment (IPT) and using insecticide-treated materials, and using anthelminthics to treat hookworm infections will reduce the prevalence of anemia in pregnancy (WHO/AFRO 2003, Steketee 2003). However, despite the strong evidence that these strategies are efficacious, the effectiveness of large-scale IFA, IPT, and antihelminthic programs has yet to be documented.

Barriers to implementing high quality programs limit the effectiveness of large-scale IFA programs addressing anemia in pregnant women. At least four such barriers have been described: inadequate supplies, low utilization of health services, poor client-provider interactions, and poor client compliance with IRA supplement regimens (Galloway et al. 2002, Yip 1996, Elder 2000, Ekstrom 2001, Winichagoon 2002, Mwadime et al., 2002). The primary challenge in Africa is addressing these barriers within a context of limited resources and capacities.

This paper describes an approach to designing anemia interventions for a resource-constrained setting.

Generally, the development of interventions should be systematic, tailoring the content and format to the specific features of the setting (van Bokhoven et al, 2003). This paper describes an approach to designing anemia interventions for a resource-constrained setting. The approach focuses on identifying and resolving barriers to the implementation of quality programs, and addresses the need for i) advocacy and wide consultation among stakeholders, ii) clarifying policy and guideline documents, iii) describing levels of performance necessary for success, iv) identifying gaps between actual and necessary performance, v) designing and implementing interventions to overcome the barriers, vi) monitoring, advocacy and evaluation. As an example, we present a process used in Uganda to develop interventions to improve the effectiveness of anemia control actions during pregnancy.

Box 1: Advocacy for anemia

The 2001 Uganda Demographic Health Survey (UDHS 2001) reported anemia levels of 30% among women aged 15-45 years, 41% among pregnant women, and 60% among children below 5 years of age.

The Uganda Coalition for Action in Nutrition estimated that 66,000 maternal deaths would occur in Uganda if the status quo were maintained. Furthermore, US$204 million in productivity would be lost over the next 10 years at current wage and employment rates. This information was presented to the Ministries of Health, Agriculture, and Education, including districts' leadership, and donors such as UNICEF, USAID, and WHO. MOST, the USAID Micronutrient Project, UNICEF and WHO provided technical guidance.

Through MOST's funding, key personnel in the MoH were able to attend international meetings, such as the International Vitamin A Consultative Group and the International Nutritional Anemia Consultative Group, and gained an increased understanding and appreciation of anemia and other micronutrient issues.

Advocacy at all Levels

Advocacy should precede all interventions. Decision-makers often fail to appreciate the important role that iron status plays in the general health of the community. Stakeholders should be encouraged to support anemia prevention and control initiatives, and sensitized to the special urgency of reducing iron deficiency and anemia among pregnant women. Without this, program implementers may encounter indifference or even opposition from some leaders during the process of improving service delivery and performance.

As a first priority, government and development partners must be made aware of anemia as a major health concern facing Africa. However, the continent faces a multitude of issues competing for attention. HIV and AIDS, Malaria and Tuberculosis, childhood illnesses, poverty, hunger, and complex emergencies have been prominent. Thus anemia may not be seen as a problem deserving of increased investments of time, money, or other limited resources. Continuing advocacy is needed for anemia to be acknowledged as a key health problem and established on the development agenda. Valid, reliable data must be applied for this purpose, and the process led by renowned senior nationals in the government, university or non-governmental/private sectors. International agencies such as the World Health Organization (WHO), United Nations Children's Fund

Once advocacy efforts have attracted the attention of major stakeholders (e.g. technical heads in health, agriculture and planning), a multisectoral technical working group should be put in place.

(UNICEF), and the World Bank, plus bilateral donors like the U.S. Agency for International Development (USAID), Deutsche Gesellschaft für Technische Zusammenarbeit, Danish International Development Agency, and the British Department for International Development may and should be mobilized to support these efforts. However, these groups need to avoid advancing the perception that they alone are driving this agenda, as governments will note that the anemia issue is "donor-funded" and may not accept ownership of it.

Advocates should develop consensus on the scope of the problem, its likely effects, and estimates of program costs at key administrative levels. The following questions are likely to be helpful in developing effective advocacy at the country level. Estimates for most countries can be developed using the PROFILES nutrition policy analysis software program.

- How many women and children die of anemia related causes every year?
- What is the net worth of productivity that will be lost if the rates of anemia remain unchanged in the next 10 years?
- What is the cost of treating morbidity associated with anemia to the family and the government?

Once the advocacy efforts have attracted the attention of major stakeholders (e.g. technical heads in health, agriculture and planning), a multisectoral technical working group should be put in place, if one does not already exist. The group's main role will be to guide the process of identifying and addressing barriers to the effective control of anemia in pregnancy. Members of this working group may include representative of:

- Programs working in reproductive health, both in the government and private sectors and at the national, district and community level;
- The national programs on malaria, Integrated Management of Childhood Illnesses (IMCI), environmental health, and nutrition;
- National medical stores or the agency providing supplies/drugs to government, private and non-government health institutions;
- The MoH arm responsible for health education (or community mobilization) and Information, Education and Communication materials;
- Representatives from the academic and health-research institutions (the medical and nursing, nutrition, public health institutions);
- The WHO and other United Nations agencies: UNICEF, Food and Agriculture Organization, and World Food Program; and
- Development partners (e.g. The Micronutrient Initiative), MOST, The USAID Micronutrient Program, Helen Keller International.

The number of members and composition of the working group may change periodically, and flexibility is needed to allow full advantage to be taken of advocacy opportunities as they arise. For example, it may be useful to invite women who have sought services at antenatal clinics to attend and share their experiences with the group. This could also serve as an opportunity to spot-check program information collected from the field. Representatives of international agencies may also be invited, as

these agencies often develop "better practices" and lessons learned from addressing similar problems in other countries.

Preferably, the department or unit within the MoH with the mandate to address anemia in pregnancy will lead the initial meetings of the working group. During these meetings, members should agree on:

a) The need to improve the effectiveness of maternal anemia control programs in the country;

b) The methodology or approach to improve program effectiveness, including the next steps;

c) The roles of the key sectors and agencies in the process;

d) A strategy for harmonizing communications, communication materials from the various stakeholder institutions and groups.

Before consensus is reached on these issues, quality gaps in the current approach may need to be explained, and the working group can explore ways to bridge these gaps. In the case of anemia control through antenatal services, a common obstacle is that most women do not adhere to the regimen recommended by WHO: a preventive dose of 60mg of iron and 400mg of folic acid per day for 180 days. As long as this problem is widespread and not addressed, the prevalence of maternal anemia will remain high in most countries. Strategies to address the problem will depend on its causes, which may vary from country to country, and even within a country.

Policies are vital to the successful implementation of health programs. They depict a government's commitment to the issues at hand (in this case, anemia), and to providing necessary resources and leadership.

Box 2: Policies and guidelines

In Uganda, policies and guidelines on the control of anemia are situated in the food and nutrition policy, the minimum package for health, reproductive health, and IMCI and malaria guidelines.

Until 2002 there was no specific anemia policy. Out of the advocacy efforts, UNICEF supported the development of a National Anemia Policy. This policy document clearly states the size of the anemia problem, and describes options for addressing it, who might implement these options, and how. It also notes the government's goal to reduce anemia by two-thirds by the end of the decade, through a variety of programs.

Ensuring Appropriate Policies & Guidelines are in Place

Policies are vital to the successful implementation of health programs. They depict a government's commitment to the issues at hand (in this case, anemia), and to providing necessary resources and leadership. Policies are also important to help mobilize political support and resources.

Anemia policies and/or guidelines may exist independently, or may be incorporated into policies for reproductive health, food and nutrition, malaria, or IMCI. If policies do not exist, it is essential to start mobilizing support to establish them. This process is demanding, but it is important. One difficult issue that arises often is that of identifying the appropriate group to take responsibility for leading the development of an anemia policy.

The policies or guidelines should specify the approaches that will be used to address anemia among different target groups in the country. Because the causes of anemia are multifaceted, multiple or multifaceted approaches should be suggested. The interventions will involve actors in several sectors, including agriculture, trade/industry, education, and health. For example, dietary diversification typically aims to increase intakes of animal foods, fruits and vegetables, an approach best implemented by agriculture extension staff and home economists. The approach should be packaged with a

In addition to clearly defining sector responsibilities at the outset of anemia programs, the levels of performance that constitute program success should be stated.

behavioral change communication component, necessitating support from the education and materials development departments. The trade and industrial sectors could expect primary involvement in food fortification programs. Measures such as improving sanitation to control hookworm transmission, and environmental management to reduce mosquito-borne illness, call for environmentalists and public health agents. Finally, the health sector plays a pivotal role in programs to provide IFA supplements, antimalarial medications and anthelminthics to pregnant women, together with counseling to enhance compliance.

Therefore, a comprehensive anemia policy will provide specific guidelines on the actions to be undertaken and the mechanisms of collaboration between those involved, to ensure that their actions are synergistic and complementary. The guidelines must meet international standards, otherwise they will lack the credibility required to mobilize support from different partners. Table 1 describes some guidelines for controlling anemia and suggested actions for different sectors.

Defining & Communicating Performance Standards for Anemia Programs

In addition to clearly defining sector responsibilities at the outset of anemia programs, the levels of performance that constitute program success should be stated. Performance standards may differ slightly from community to community depending on the level of program operation, available resources, and infrastructure or activities already in place. However, the goals should align with existing national policies and guidelines and whenever possible, reflect internationally accepted recommendations. This will help ensure that specified standards are considered feasible and credible to health providers and other stakeholders. Table 2 illustrates the performance standards for anemia control in women presenting for ANC in Uganda. All the actions and standards in the table are essential for effective anemia control (Huffman et al. 2001; Mwadime et al. 2002). The failure by service providers to perform any of the tasks listed is an indication of health care quality shortcomings, and indicates that anemia among pregnant women is unlikely to be under control.

Performance standards and guidelines must be communicated clearly to service providers in both public and private sectors. Unfortunately, frontline health providers in Africa rarely receive new guidelines on time, and when they do, the guidelines may not be 'user-friendly.' Many service providers will fail to understand or internalize them (Mwadime et al 2002). In addition, new guidelines are often communicated only to public institutions and not to private and non-governmental ones. As such, some service providers continue carrying out actions contrary to updated standards of care; it is, for example, common to find service providers in the same region prescribing different levels of iron folate supplements to pregnant women. Therefore, appropriate fora should be sought for the dissemination of anemia control guidelines and continuing education to keep service providers' skills current.

Table 1: Sector-wide actions to prevent and control anemia during pregnancy

Cause of anemia	Health Sector	Agriculture & Environment Sectors	Trade & Marketing Sectors	Education Sector
Iron and folic acid deficiency	• Improve quality of ANC services and encourage women to attend as early as possible in pregnancy • Make accessible and prescribe iron/folate or multiple micronutrient supplements to all pregnant women • Screen pregnant women for severe anemia and treat appropriately • Promote consumption of diversified diets, especially foods rich in, or fortified with, iron & folic acid	• Promote development of new varieties of staples that are rich in micronutrients (e.g. establish partnerships with groups such as CGIAR/Harvest-Plus) • Through extension services, increase availability of micronutrient-rich varieties • Promote the production, preservation, preparation, and consumption of foods rich in iron & other micronutrients	• Set regulations for fortification with iron & folic acid • Encourage production of fortified foods • Promote (through social marketing) foods fortified with iron & other micronutrients	• Educate students about good nutrition, the adverse effects of iron & folic acid deficiencies, and the need for supplements at certain stages of the life cycle • Promote weekly supplementation of adolescent girls
Other nutrient deficiencies	• Educate and counsel on dietary diversification (to increase consumption of micronutrient-rich foods, e.g. daily consumption of fruits, dark-colored vegetables, animal products, fortified foods) • Monitor the use of foods fortified with iron	• Educate families in production, preservation, and consumption of foods rich in micronutrients e.g. fruits, colored vegetables, and animal foods	• Fortify foods with vitamin A & other micronutrients, such as B-vitamins	• Educate students about the importance of nutrition and options for improving nutrient intake
Hookworm infection	• Make accessible and prescribe anthelminthics in second trimester (and early third trimester if hookworm prevalence is >50% • Counsel on sanitation and other preventive measures for hookworm infection	• Educate communities in use of shoes and importance of sanitation in preventing worm infestation during agricultural activities	• Social marketing of anthelminthics to treat worm infestation	• Educate students about the causes of hookworm infections and options for its control • Ensure that schools control parasitic infections through periodic presumptive treatment of hookworm and other parasites of public health importance
Malaria infection	• Make available and prescribe antimalarial drugs for all pregnant women according to national malaria management protocols • Diagnose and treat malarial illness according to national malaria management protocols • Educate women to seek treatment for fever during pregnancy; and to adhere to malaria treatment regimens • Increase availability and promote use of insecticide-treated materials	• Educate community leaders and pregnant women on environmental control of mosquitoes	Through social marketing, • promote the proper use of antimalarials during pregnancy • promote the use of insecticide-treated nets during pregnancy.	• Educate students about the causes of malaria and options for its control • Ensure that schools provide treatment and control malarial infections in students • Establish links with malaria control units of the health department and ensure that the school environment is free of excess malaria risk

Table 2: Performance standards for the control of anemia during pregnancy

Problem	Performance Standard
	All pregnant women coming into contact with an ANC service provider shall be:
Iron and folic acid deficiency	▲ Prescribed and/or provided with supplies of iron supplements (or multiple micronutrient supplements) to last until the next visit
	▲ Assessed for anemia by palm pallor or hemoglobin analysis method and if found to be anemic treated with 120mg of iron and 400mg folic acid, for 3 months
	▲ For women who are not anemic, counseled on the recommended dosage of iron (60mg per day) and folic acid (400mg per day) supplements
	▲ Counseled on potential side effects of the supplements and associated remedial actions
	▲ Counseled on the importance of compliance with the treatment or prevention regimen
Other nutrient deficiencies	▲ Counseled on the importance of and ways to achieve dietary diversification (mainly to increase consumption of foods dense in micronutrients like animal products, vegetables, fruits)
Hookworm infection	▲ Prescribed or provided with anthelminthics (the main one being used in the region is 500mg of mebendazole) during second trimester and also the third trimester of pregnancy in areas with rates of hookworm infestation >40%
	▲ Counseled on prevention of hookworm at home
Malaria infection	▲ Prescribed or provided with antimalarial drugs in malaria-prone areas, according to national malaria protocols for treatment and prevention during pregnancy
	▲ Counseled on the importance of sleeping under insecticide-treated nets
Continuity of service	▲ Provided a return date and told what services to expect at next visit

Adapted from Huffman et al. 2001; MoH/Uganda 2001

Analyzing Gaps in Current Performance

One crucial step in performance improvement is to identify the underlying reason why actors are not performing essential actions at the desired level. Why is it that all women aren't provided with enough IFA supplements to last until the next visit? Why aren't they being counseled on potential side effects of the supplements? Identifying the underlying causes of the difference between the desired and the actual situation is done after describing the current level of performance. To describe the current level of performance, stakeholders should agree on questions of importance to them. Table 3 provides examples.

Combinations of qualitative and quantitative methods are recommended to assess program performance. For instance, health worker practices can be assessed using service observation checklists, by conducting client exit interviews, and through focus group discussions. The performance assessment methods used in Uganda are described briefly in Box 3.

Data can be collected from population-based or convenience samples as needs and resources dictate. The results of analysis may be summarized at several levels (see Box 4), and when sampling is representative, results can be generalized to larger populations of clients, providers, and/or facilities. For example, data collection undertaken in enough randomly chosen facilities and in enough randomly chosen districts can provide statistics on facilities at the national level.

Box 3: Assessment of level of performance

Fieldwork to assess anemia control through ANC was undertaken in 4 of the 56 districts in the country. Eight health facilities were selected in each district to represent both government and NGO services. Qualitative and quantitative data collection methods were used, including focus group discussions with District Health Teams, in-depth interviews with managers of health facilities and officers in charge of ANC services, and interviews with clients immediately after they had received ANC services. Inventory checklists were used to assess the adequacy of supplies in the facilities. Interview guides and checklists were adapted from instruments used previously in Uganda.

Enumerators and supervisors were recruited from the health services in each district and were trained over a five-day period. After pretesting the instruments in a district not involved in the study, enumerators worked in pairs and spent a full day collecting data in each facility.

Conclusions were checked against information gathered in meetings held with district health teams and national experts. Through collaboration with experts and stakeholders at district and national levels, barriers to effective anemia programs were identified, their causes determined, and solutions proposed.

Table 3: Information useful in assessing the performance of health delivery systems in the control of anemia during pregnancy

Questions at client level

- At what stage of pregnancy do women typically come for their first antenatal visit?
- How often do women come for ANC during pregnancy?
- Are women provided with IFA supplements, antimalarials, and anthelminthics?
- Are they assessed for anemia and other forms of malnutrition, and are these conditions managed appropriately?
- Are they provided with the correct IFA supplement dosage, and enough supplies to last until the next visit?
- Are they counseled on compliance, possible side effects, and nutrition during pregnancy?
- Are they educated about why they are receiving the services and what to expect for the service to be effective, and about safety in handling supplements and medicines at home?
- Are they provided with a return date and told what services to expect at the next visit, and why?
- Are women satisfied with their interactions with the service providers (i.e. are their dignity and privacy respected, and are they given the opportunity to ask questions)?

Questions at provider/system level

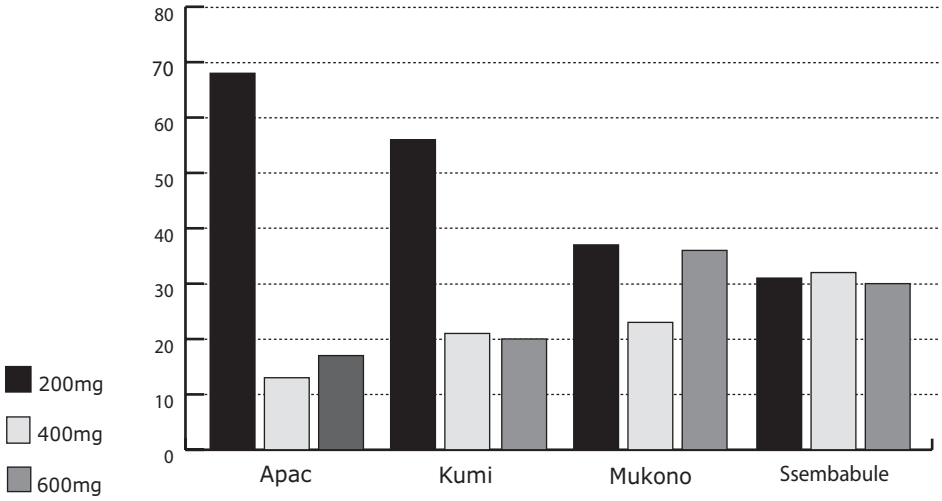
- How often are ANC services and outreach provided, and where?
- Do health providers have physical access to and knowledge of anemia (or related) guidelines and protocols, e.g., management of supplementation, IPT, and antihelminthic treatment for pregnant women?
- Do they know the dosage and amounts of supplements, antimalarials, and anthelminthics needed to meet client needs for anemia prevention and treatment?
- How many days/months of the year are supplies of supplements, antimalarials and anthelminthics adequate? What if the coverage increased to meet national targets?
- Do they have tools and materials to facilitate prescription services, counseling and education on anemia?

Box 4: Maternal anemia control: program performance at the health delivery system, provider and client levels in Uganda

Performance gaps at District/systems level

- The number of days the facilities provided ANC services each week varied between and within districts. In over 40% of facilities, ANC services were provided on only one or two days each week, limiting client access to care.
- Most facilities had sufficient stocks of ferrous sulfate/folic acid (IFA) only 50% of the time over the previous three months. Because of this inconsistent supply, providers tended to "save" supplies by not providing all pregnant women the supplements and/or dispensing tablets for fewer than the required number of days.
- Although almost all health units reported providing the ANC package as recommended in the National Reproductive Health Guidelines, only 9% of the ANC providers interviewed were aware of the existence of the 2001 guidelines.
- ANC providers considered the number of supervisory visits to be inadequate.

Figure 1: Dosage of ferrous sulphate prescribed to respondents in four districts



Performance gaps at provider level

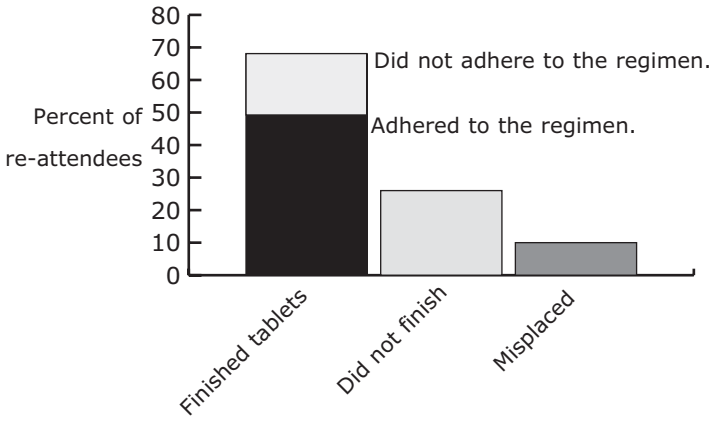
- The implementation of guidelines was inconsistent both between and within districts, e.g., the dose of iron supplements provided solely for prevention varied from one to three tablets (each of 60mg) per day.
- Although most health facilities reported routinely controlling malaria and hookworm, these services were not often observed in this study. Forty-eight percent of clients reported receiving antimalarial medications on the current or the previous ANC visit, and a similar proportion reported being asked about malaria symptoms. Almost two-thirds of facilities reported providing routine antihelminthic treatment, but only 14% of women interviewed in their third trimester had such treatment recorded on their ANC cards.

Box 4 (continued)

Performance gaps at client level

- Counseling provided to ANC clients was of uneven quality. While most were told the dose of iron to take, fewer than 10% were warned of potential side effects or how to deal with them. Half of the women were not told of the benefits of controlling malaria during pregnancy.
- Group health talks were often given as a component of ANC clinics, but one-third of women reported not having understood most of what was discussed.
- Despite the above findings, most clients reported the ANC services were of adequate quality. Almost 80% complained of long waiting times, but said that they did not mind this as long as they received the services and the "medicines" they expected.
- On average, women made four ANC visits per pregnancy, but very few sought care in their first trimester.
- 60% of women who had attended an ANC clinic had been given IFA. Of these, two-thirds reported having finished all the tablets. Somewhat surprisingly, few clients expressed any concern about taking iron supplements.
- Most women reported that receiving an ANC card as their primary reason for going to the clinic. This card was required for accessing emergency services during pregnancy or delivery. Delivering in a health facility was not seen as desirable in some communities. Forty-one percent of women reported seeking ANC after experiencing a specific problem, rather then for 'preventive' reasons.

Figure 2: Response by ANC re-attendees on use of IFA supplements



When service providers are involved in developing the methodology and tools, and in collecting, analyzing, interpreting and presenting the data, their engagement with the program is enhanced and it gains sustainability.

The data collection process also offers a critical opportunity to build the capacity of service providers and empower the District Health Team. When service providers are involved in developing the methodology and tools, and in collecting, analyzing, interpreting and presenting the data, their engagement with the program is enhanced and it gains sustainability. Capacity development helps mobilize and motivate actors, particularly district-level staff, to find solutions to the barriers to anemia control for pregnant women.

Following data collection and analysis, meetings can be held with district health teams and national experts from the Ministry of Health (MoH), universities, and international agencies and development partners working in the country. Discussion should focus on how closely the findings reflect participants' understanding of what is actually happening in the districts. If participants feel that important aspects of the situation have not been adequately addressed in the document, then anecdotal or qualitative additions might be warranted.

Box 5: Establishing stakeholder support for results

In Uganda, the data collected from the four districts were presented at the district level to service providers, the district health team, local political leaders and community members, including pregnant women. The survey methodology, findings, and conclusions were also discussed. Cause-effect trees were then used to delve into the factors underlying the identified barriers. There was an agreement that the major root causes of the barriers to effective anemia control services were:

- Inadequate supplies of iron/folic acid supplements, anthelminthics, and antimalarials led providers to offer clients supplies inadequate to last until the next visit
- Late and infrequent use of antenatal services by pregnant women
- Lack of understanding among women of the importance of taking iron/folic acid, antihelminthics, and antimalarials during pregnancy
- Health workers not being aware of the anemia (or related) guidelines, in terms of the recommended preventive dosages of iron/folic acid

The stakeholders should be convinced that the data are credible and represent accurately the situation in the districts. The stakeholders then identify the primary barriers to the effectiveness of the existing program and reach a consensus on the causes of these barriers, at least those that can be addressed by the district health teams and their partners. District staff from public and private ANC service facilities, as well as ANC clients and community leaders, should also be invited to take part in discussions of the causes underlying barriers to effective programming.

Once underlying causes have been elucidated, the necessary next steps for addressing barriers to anemia program effectiveness can be named. For example,

- if the barrier is inadequate supply of IFA supplements, whose cause is poor estimation of needs in the district, the next steps are developing a methodology for accurate estimation of supplements and training for its use in estimating the needs in the district;
- if the barrier is that health providers do not prescribe the correct dosage of supplements, caused by their lack of knowledge concerning new guidelines, the next step is to raise awareness and understanding among providers about the new guidelines.

From these examples it is clear that the next steps are in fact broad statements of the interventions required to mitigate the identified barriers to program effectiveness.

Intervening to Mitigate Barriers to Effective Anemia Control in Pregnancy

Identifying the interventions

The interventions broadly identified above are but hypotheses; the analysis may not have identified the real underlying cause of the barriers to program effectiveness. Stakeholders need to discuss each suggested intervention to assess its feasibility and potential based on their experience, understanding of the systems involved, capacities, and resources in the locale.

During the discussions important capacity issues may arise, for example:

- If women had the IFA supplements and were counseled appropriately, would they, indeed, take them? What would be the issues involved in convincing women to take the supplements?
- If the districts ordered the appropriate quantities of supplements, would they get them? What would be the issues involved in getting adequate supplies of supplements, antihelminthics, and antimalarials to districts?
- What issues would be involved in the distribution, prescription, counseling, and education for women taking the supplements and medications?

The best way to identify capacity needs for interventions is to try promising interventions or practices with a few of the providers or clients and see what issues hamper the implementation process

The best way to identify capacity needs for interventions is to try promising interventions or practices with a few of the providers or clients and see what issues hamper the implementation process (see Box 6). For instance, a program may seek to provide women with supplements, counsel them appropriately, and assess their compliance. A district team can be provided with instructions for estimating supplement needs, coached in their use, provided with additional funds to meet any supply deficit, and allowed to repeat this approach to acquire supplements over a period of months. During this "trial," implementers would share their experience, discovering the factors that enabled or constrained success. In most of Africa important capacity components will include:

a) a conducive work environment;

b) the will of the staff to improve services;

c) the skill and knowledge levels of the staff;

d) staff having the time, relative to their workload, to carry out the program activities;

e) access to information; and,

f) the authority and ability to negotiate so as to move issues among the leadership.

Box 6. Trial of promising practices in Uganda

Three interventions were included in the trial: 1) assisting districts in estimating quantities of supplements and antehelmithics needed to meet the needs of ANC attendees, 2) identifying and using community based approaches to supplement distribution, 3) education and counseling to ANC attendees on the importance of ANC and compliance with supplementation regimens.

- Working with two districts, a methodology was developed for estimating the quantities of supplements and antehelminthics needed to meet the needs of ANC clients. The districts used the new methodology. Findings reflected earlier estimates that facilities were accessing supplements to meet just a third of their needs. Later, district representatives came together to discuss the findings, and decided to raise the additional funds from their primary health care budgets.
- Trials of improved practices were conducted to identify "enablers" and "impeders" to pregnant women's use of ANC and compliance with supplement regimens. A two-week follow-up was conducted.

Disseminating Findings & Designing Interventions

Once the team has agreed on what seems to work within the context of existing resources and capacities in the district, the immediate activities and programs should be decided upon. Stakeholders must determine who will take on various roles in the implementation process, what resources are needed, and from where these resources will come. There should be consensus about who will lead the implementation process. Leadership can be a sensitive issue, especially if additional finances are committed to the new activities. Normally, the government sector best prepared to carry out, monitor, and/or pay for the activity should take leadership of it. In some cases, local political or administrative factions may take responsibility for seeing that results are achieved.

The next natural step would be for each player to prepare a work plan for the implementation and share it with the stakeholders. Sharing work plans in such a setting cultivates public commitment and a sense of accountability. For instance, districts would clearly specify how they plan to increase supply of supplements, anthelminthics and malaria drugs, and how they will ensure that all ANC service providers offer quality services. They would then share these plans with their supervisors from the MoH, and with local leaders. A Memorandum of Understanding would be prepared and signed by all actors, and a follow-up meeting scheduled.

Stakeholders must determine who will take on various roles in the implementation process, what resources are needed, and from where these resources will come.

Box 7: Agreeing on Interventions

The Reproductive Health Unit of the MoH called two meetings to disseminate the findings of the formative research and initiate planning for strengthening and scale up of the anemia components of ANC. Twenty of the 56 districts in Uganda were invited. Districts were represented, where available, by the Director of Health Services, a public health nurse, district political leaders responsible for health, and focal persons in reproductive health, nutrition, and logistics. Central-level MoH representatives were invited from departments responsible for malaria, environmental health, nutrition, and logistics. Districts held discussions with the MoH representative on how the interventions—increasing supplies of iron/folate supplements, providing antihelminthics and malaria IPT to all pregnant women, using job aids to improve service provision—were to be implemented at different levels of the health delivery system.

There was agreement that:

1) MoH with support from MOST would prepare health provider fact sheets on providing quality anemia control services. Fact sheets would be based on experience to date, and distributed to the districts.
2) UNICEF and the MoH nutrition unit would continue to prepare job aids and information, education and communication materials for community sensitization on the importance of ANC and anemia control during pregnancy.
3) The MoH nutrition unit would distribute and disseminate the new anemia policy document to all districts and health facilities.
4) Districts would a) use the method developed with the consultant to estimate IFA supplement, mebendazole (antihelminthic) and Fansidar (antimalarial) needs and include funds for these supplies in their next quarterly plans, b) ensure that all facilities had sufficient drug and supplement supplies on a continuous basis, c) ensure that the policies, job aids, fact sheets, and protocols reach the facilities, and d) provide facilitative supervision to ensure that services, especially supplement dispersion and counseling, are performed according to protocols.

The success of programs is inextricably linked to their leadership, and the MoH and districts need to have a focal person to champion improved quality of interventions to control anemia.

Implementing the Interventions

The effectiveness of any performance improvement process depends on program leadership. The leader must ensure that activities are implemented as planned, that stakeholders are informed on progress, and that coordinated solutions to problems that arise are identified and carried out. All too often, leaders start such initiatives but do not see them through to completion and instead start or move on to other activities. This situation may result from competing demands, shifting priorities, or deployment to other jobs. Nevertheless, the success of programs remains inextricably linked to their leadership, and the MoH and districts need to have a focal person to champion improved quality of interventions to control anemia. The process must be institutionalized. For the agreed activities to take place in a timely manner, a number of factors are crucial:

- Resources (including materials and personnel) needed to ensure that interventions are carried out are available and used efficiently;
- The unit heads and their staff are motivated and supported at health unit level;
- Information about what is happening at facility level and feedback on what is happening at the different implementation points is freely and regularly exchanged;
- Periodic self-assessments ensure progress is being made towards the agreed-upon outputs/goals.

Monitoring, Advocacy & Evaluation

Monitoring is essential as it provides information on the extent to which interventions are taking place as planned and producing the desired results. The best approach would be to integrate collection of any new information with ongoing health management information systems (HMIS). Agreement on a few action-triggering indicators in or added to the HMIS is a useful starting point. Examples of indicators are:

- Proportion of days in the quarter that a facility did not have supplies of supplements, anthelminthics, and antimalarials sufficient to meet needs. Proportion of facilities without sufficient supplies.
- Proportion of pregnant women (visiting the clinic or registered with the community resource persons) provided with enough supplements to last until the next clinic visit (or home visit by the community resource persons [CRP]—where community-based distribution takes place).
- Proportion of women exhausting their supply of supplements provided at prior visit to the clinic, by next clinic visit (or by next visit by the CRP).

A threshold for action (trigger-point) can be set for each indicator. If it is contravened, appropriate action should be taken. The action can be decided in the planning stages, by or with the district health team, service providers and local leaders. Periodic monitoring meetings at national and district levels can be held, and may

be part of other ongoing periodic meetings. During the monitoring meetings, stakeholders should be updated on the progress of anemia control and prevention activities. Lessons learned from other districts can also be shared, and high-performing districts or units can be used as learning sites. Documentation of lessons learned in the process of implementing performance improvement activities can be useful for scaling up better practices in anemia control among pregnant women.

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